New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

NPN MEDIUM POWER SILICON SWITCHING TRANSISTOR

Devices

2N696 **2N697**
2N696S **2N697S**

MAXIMUM RATINGS

Ratings	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	60	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Total Power Dissipation @ $T_A = 25^0C$ (1) @ $T_C = 25^0C$ (2)	P_T	0.6 2.0	W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.075	$^0C/mW$

1) Derate linearly 4.0 $mW/^0C$ for $T_A > 25^0C$
2) Derate linearly 13.3 $mW/^0C$ for $T_C > 25^0C$

TO-5*

*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage R_{BE} = 10 Ω, I_C = 100 mAdc		$V_{(BR)CER}$	40		Vdc
Collector-Base Cutoff Current V_{CB} = 100 Vdc V_{CB} = 30 Vdc		I_{CBO}		10 0.1	μAdc
Emitter-Base Cutoff Current V_{EB} = 7.0 Vdc		I_{EBO}		10	μAdc
ON CHARACTERISTICS (3)					
Forward-Current Transfer Ratio I_C = 150 mAdc, V_{CE} = 10 Vdc	2N696,s 2N697,s	h_{FE}	20 40	60 120	
I_C = 500 mAdc, V_{CE} = 10 Vdc	2N696,s 2N697,s		12.5 20.0		
Collector-Emitter Saturation Voltage I_C = 150 mAdc, I_B = 15 mAdc		$V_{CE(sat)}$	0.3	1.5	Vdc
Base-Emitter Saturation Voltage I_C = 150 mAdc, I_B = 15 mAdc		$V_{BE(sat)}$		1.3	Vdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
DYNAMIC CHARACTERISTICS					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer Ratio I_C = 50 mAdc, V_{CE} = 10 Vdc; f = 20 MHz	2N696,s 2N697,s	$\lvert h_{fe} \rvert$	2.5 3.0	10 12	
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{obo}	2.0	25	pF
SWITCHING CHARACTERISTICS					
Turn-On Time (See Figure 3 of MIL-PRF-19500/ 99)		t_{on}		200	ηs
Turn-Off Time (See Figure 4 of MIL-PRF-19500/99)		t_{off}		1,000	ηs

(3) Pulse Test: Pulse Width 250 to 350μs, Duty Cycle ≤ 2.0%.